Trend Study 13A-3-99

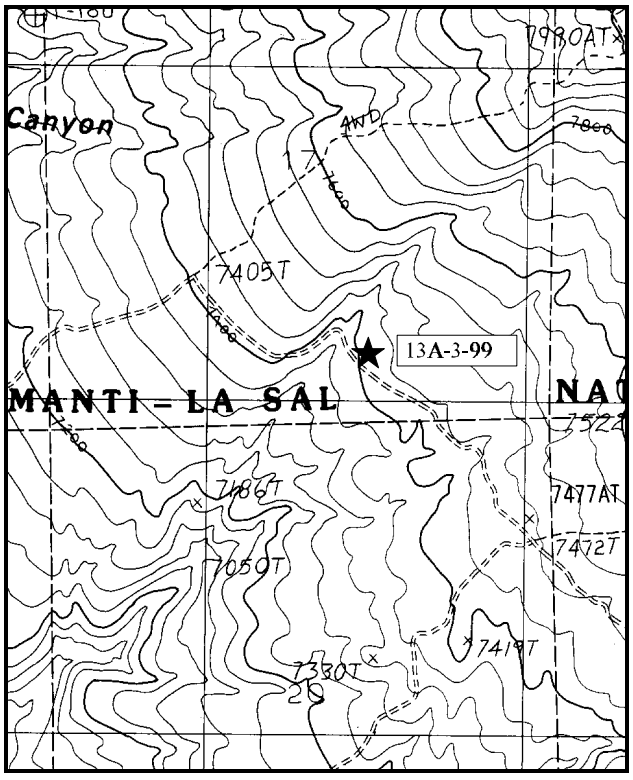
Study site name: Buck Hollow . Range type: Chained, Seeded P-J .

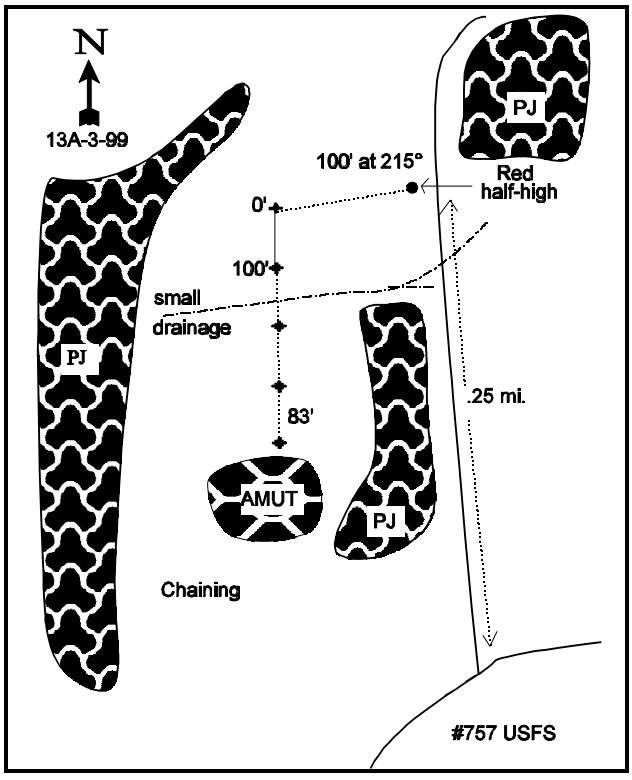
Compass bearing: frequency baseline 165°M.

Footmark (first frame placement) 5 feet, footmarks (frequency belts) line 1 (11 & 95ft), line 2 (34ft), line 3 (59ft), line 4 (71ft).

LOCATION DESCRIPTION

From LaSal Junction, proceed east on SR 46 for 0.3 miles past mile marker 5. Turn left onto County Road 130 and travel 2.95 miles to a fork. Bear right on road #166 and go 0.8 miles to another fork. Bear right, and continue 1.3 miles to a cattleguard marking the Forest Service boundary. Continue 1.55 miles to a fork, turn left and go 0.25 miles. A witness post (1 ½ foot tall fencepost) is located on the left side of the road. The transect starts 100 feet out in the chaining. The study is marked by half high green fenceposts.
***An alternate route is to take SR 191 south from Moab. At mile marker 113, continue 0.15 miles south and turn left (east) on county road #166. Continue south on main road for 11.4 miles to a fork, and turn left (east). Go 1.3 miles to the cattleguard and Forest Service boundary listed above. Follow remainder of dirtections as noted above.





Map Name: LaSal West Diagrammatic Sketch

Township 28S , Range 24E , Section 17 UTM 4247658.608 N, 647773.460 E

DISCUSSION

Trend Study No. 13A-3 (33-3)

The Buck Hollow study samples a chaining within the wide-ranging pinyon-juniper type on the south slope of the LaSal Mountains. This area is thought to be particularly important as a principal elk wintering area. As of 1999, there was an estimated 66 deer days use/acre (163 ddu/ha), 15 elk days use/acre (37 edu/ha), and 20 cow days use/acre (49 cdu/ha) on the site. The 700 acre Buck Hollow chaining and seeding project was completed in 1982. The site is now dominated by seeded grasses which currently contribute 62% of the total vegetative cover. Scattered clumps of unchained, mature pinyon-juniper provide excellent escape cover. This woodland community was an old, very mature stand when it was chained. The elevation of the site is 7,300 feet with a general aspect to the southwest on a gentle south-facing slope (5-7%).

The moderately deep soil on this rangeland site has an effective rooting depth of almost 13 inches. The soil is a reddish-brown sandy clay loam with stones throughout the upper profile. It is mildly alkaline (7.6 pH) and shows little evidence of erosion within the chained area. Besides the good cover of perennial grasses, litter left in place from the chaining also provides excellent soil protection. There is definite soil movement in the surrounding mature pinyon-juniper woodland type.

Besides scattered clumps of serviceberry and true mountain mahogany, there is little other desirable browse within the chaining. Most of the mature seed-producing plants occur nearby on the edge of the chaining. The browse population on the site is mainly made up of young plants, just getting established. Four-wing saltbush was seeded, but no plants were sampled on the transect. Some nearby plants were measured for height/crown. There are some patches of Gambel oak that are lightly browsed. There were abundant seedlings in 1987, which were all growing around the mature plants. However, no seedlings have been found since. There is some reinvading and/or releasing of pinyon and juniper within the chaining. The point-quarter method estimated 64 juniper trees/acre and 115 pinyon trees/acre. Average diameter of juniper was 3.3 inches while that of pinyon was 3.9 inches.

Seeded grasses are the prevalent forage available in this chaining. These large vigorous plants are mainly smooth brome, intermediate wheatgrass, and crested wheatgrass. Combined, they represented 96% of the grass cover and 70% of the total vegetative cover in 1994. At the present time, the numbers are very similar. Combined, they now contribute 97% of the grass cover and 62% of the total vegetative cover. Several other species are present, including tall wheatgrass, orchardgrass, Indian ricegrass, bottlebrush squirreltail, Carex, and an *Elymus* species. Forbs are not as essential because they only contribute about 20% of the total vegetative cover. The most abundant forb is alfalfa, which makes up 70% of the forb cover.

APPARENT TREND ASSESSMENT

Excellent ground cover is provided by the dense mixture of bunch and rhizomatous grass species. Herbaceous understory cover is excellent. Litter cover is also quite high at 61% (53% in 1994). There is a scattering of rock and pavement cover totaling less than 10%. Percent bare ground is only at 12% (14% in 1994).

1994 TREND ASSESSMENT

The soil trend should be considered stable at this time as there is still a generous amount of litter cover from the chaining and herbaceous cover is excellent with only about 14% bare ground. The browse species are not a very significant contributor to the productivity of the site for they only make up 15% of the total vegetative cover, with almost all of that coming from small pinyon. Trend for browse is stable but it is an insignificant contributor to the productivity of the site. Within the herbaceous understory, the seeded species make up 80% of the total vegetative cover. The nested frequency values for the grasses have gone down slightly with the nested frequency of forbs going up slightly; trend for the herbaceous understory is stable.

TREND ASSESSMENT
soil - stable
browse - stable, but almost nonexistent
herbaceous understory - stable

1999 TREND ASSESSMENT

The soil trend is considered to be improving with improved ratios of protective cover to bare soil. Vegetative cover and litter cover have increased, with a corresponding decrease in percent bare soil. The browse species are still not a very significant contributor to the productivity of the site as they only make up 14% of the total vegetative cover, with almost all of that coming from small pinyon. Trend for browse is stable but it continues to be an insignificant contributor to the productivity of the site. The majority of the herbaceous species cover comes from seeded species which make up 77% of the total vegetative cover. The nested frequency values for the grasses have gone up slightly with the nested frequency for forbs going down slightly. Because grasses almost triple the cover of the forbs, overall trend for the herbaceous understory is stable.

TREND ASSESSMENT
soil - improving
browse - stable, but almost nonexistent
herbaceous understory - stable

HERBACEOUS TRENDS --
Herd unit 13A, Study no: 3

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'87	'94	'99	'87	'94	'99	'94	'99
G	Agropyron cristatum	$_{b}$119	$_{a}$58	$_{a}$80	54	28	33	.88	2.45
G	Agropyron intermedium	$_{b}$290	$_{a}$208	$_{a}$205	89	71	71	6.18	6.94
G	Bromus inermis	$_{a}$150	$_{b}$208	$_{b}$231	56	66	78	7.42	10.11
G	Carex spp.	9	23	19	5	10	9	.46	.44
G	Oryzopsis hymenoides	$_{b}$5	$_{a}$-	$_{a}$-	3	-	-	-	.00
G	Poa fendleriana	-	3	8	-	1	4	.03	.09
G	Poa secunda	-	-	6	-	-	2	-	.06
G	Sitanion hystrix	$_{b}$34	$_{b}$21	$_{a}$3	16	11	1	.13	.03
Total for Annual Grasses		0	0	0	0	0	0	0	0
Total for Perennial Grasses		607	521	552	223	187	198	15.12	20.14
Total for Grasses		607	521	552	223	187	198	15.12	20.14
F	Alyssum spp. (a)	-	-	-	-	-	-	.00	-
F	Arabis hirsuta	2	-	6	2	-	2	-	.01
F	Astragalus convallarius	18	21	22	7	11	12	.37	1.35
F	Aster spp.	-	2	-	-	1	-	.03	-
F	Chaenactis douglasii	3	3	-	1	2	-	.01	-
F	Collinsia parviflora (a)	-	3	-	-	1	-	.00	-
F	Cruciferae	4	-	-	2	-	-	-	-

Type	Species	Nested Frequency			Quadrat Frequency			Average Cover %	
		'87	'94	'99	'87	'94	'99	'94	'99
F	Cryptantha spp.	$_{a}$-	$_{b}$17	$_{a}$4	-	8	2	.06	.01
F	Descurainia pinnata (a)	-	7	1	-	3	1	.01	.01
F	Gilia spp. (a)	-	3	-	-	1	-	.00	-
F	Lesquerella spp.	$_{b}$22	$_{a}$-	$_{a}$-	13	-	-	-	-
F	Machaeranthera spp	-	1	-	-	1	-	.00	-
F	Melilotus officinalis	$_{c}$53	$_{b}$18	$_{a}$-	25	7	-	.16	-
F	Medicago sativa	$_{a}$1	$_{b}$28	$_{b}$27	1	13	12	1.64	4.81
F	Penstemon spp.	$_{a}$-	$_{b}$24	$_{b}$21	-	11	9	.13	.17
F	Phacelia spp.	$_{b}$10	$_{a}$-	$_{a}$-	6	-	-	-	-
F	Phlox austromontana	$_{a}$-	$_{b}$14	$_{b}$10	-	7	4	.25	.09
F	Physaria chambersii	$_{a}$-	$_{b}$14	$_{b}$16	-	7	6	.03	.20
F	Polygonum douglasii (a)	-	10	1	-	5	1	.02	.00
F	Sanguisorba minor	$_{a}$3	$_{b}$-	$_{b}$-	3	-	-	-	-
F	Senecio multilobatus	-	-	2	-	-	2	-	.03
F	Sphaeralcea coccinea	11	12	15	5	6	7	.25	.28
F	Tragopogon dubius	3	2	-	1	2	-	.03	-
F	Trifolium spp.	-	-	2	-	-	1	-	.03
F	Unknown forb-perennial	4	-	-	2	-	-	-	-
Total for Annual Forbs		0	23	2	0	10	2	0.05	0.01
Total for Perennial Forbs		134	156	125	68	76	57	3.00	7.01
Total for Forbs		134	179	127	68	86	59	3.05	7.02

Values with different subscript letters are significantly different at % = 0.10

BROWSE TRENDS --
Herd unit 13A, Study no: 3

Type	Species	Strip Frequency		Average Cover %	
		'94	'99	'94	'99
B	Amelanchier utahensis	2	0	-	-
B	Atriplex canescens	0	0	-	-
B	Cercocarpus montanus	4	4	-	.15
B	Juniperus osteosperma	0	4	-	.15
B	Opuntia spp.	0	1	-	-
B	Pinus edulis	0	4	2.64	3.98
B	Symphoricarpos oreophilus	1	0	-	-
Total for Browse		7	13	2.64	4.28

CANOPY COVER --
Herd unit 13A, Study no: 3

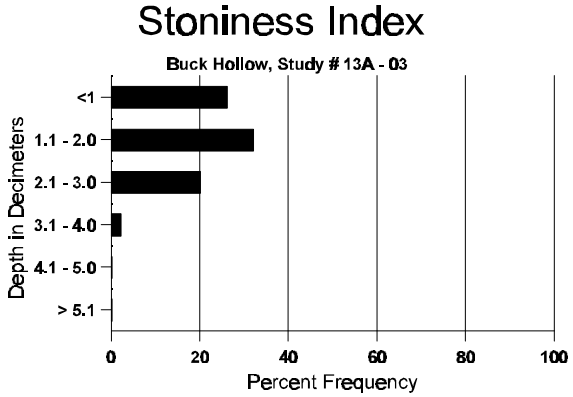
Species	Percent Cover '99
Juniperus osteosperma	2
Pinus edulis	4

BASIC COVER --
Herd unit 13A, Study no: 3

Cover Type	Nested Frequency '94	Nested Frequency '99	Average Cover % '87	Average Cover % '94	Average Cover % '99
Vegetation	332	329	11.25	24.78	34.29
Rock	192	141	2.50	4.80	5.32
Pavement	195	185	2.25	.96	4.56
Litter	386	389	72.75	53.42	61.43
Cryptogams	-	9	0	0	.12
Bare Ground	246	186	11.25	14.31	12.04

SOIL ANALYSIS DATA --
Herd Unit 13A, Study # 03, Study Name: Buck Hollow

Effective rooting depth (cm)	Temp °F (depth)	pH	%sand	%silt	%clay	%0M	PPM P	PPM K	dS/m
12.6	590.4 (15.2)	7.6	52.9	21.8	25.3	4.5	25.0	144.0	0.7



PELLET GROUP DATA --
Herd unit 13A, Study no: 3

Type	Quadrat Frequency '94	Quadrat Frequency '99
Rabbit	10	19
Elk	14	12
Deer	17	29
Cattle	2	6

Pellet Transect Days Use/Acre (ha) '99
N/A
15 (37)
66 (163)
20 (49)

BROWSE CHARACTERISTICS --
Herd unit 13A, Study no: 3

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Amelanchier utahensis																		
S	87	21	-	-	-	-	-	-	-	-	21	-	-	-	700			21
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	9	6	1	-	-	-	1	-	-	15	-	2	-	566			17
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20			1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	-	2	-	-	1	-	-	-	-	3	-	-	-	100	59	28	3
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	66	75	1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	59	73	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	45%	05%	10%	-94%
'94	00%	00%	00%	
'99	00%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	666	Dec:	-
	'94	40		-
	'99	0		-

Cercocarpus montanus																		
Y	87	-	-	1	-	-	-	-	-	-	1	-	-	-	33			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
M	87	-	1	-	-	-	-	-	-	-	1	-	-	-	33	21	19	1
	94	4	1	-	-	-	-	-	-	-	5	-	-	-	100	33	30	5
	99	1	2	-	-	2	-	-	-	-	5	-	-	-	100	48	38	5

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor	%Change
'87	50%	50%	00%	+34%
'94	20%	00%	00%	+ 0%
'99	80%	00%	00%	

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	66	Dec:	-
	'94	100		-
	'99	100		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Juniperus osteosperma																		
S	87	2	-	-	-	-	-	-	-	-	2	-	-	-	66			2
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	5	-	-	-	-	-	-	-	-	5	-	-	-	100			5
M	87	1	-	-	-	-	-	-	-	-	1	-	-	-	33	51	197	1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	40			2

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'87	00%	00%	00%
'94	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	33	Dec:	-
	'94	0		-
	'99	100		-

Opuntia spp.																		
M	87	1	-	-	-	-	-	-	-	-	1	-	-	-	33	12	6	1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	4	19	0
	99	1	-	-	-	-	-	-	-	-	1	-	-	-	20	8	18	1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'87	00%	00%	00%
'94	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
	'87	33	Dec:	-
	'94	0		-
	'99	20		-

AGE	YR	Form Class (No. of Plants) 1	2	3	4	5	6	7	8	9	Vigor Class 1	2	3	4	Plants Per Acre	Average (inches) Ht.	Cr.	Total
Pinus edulis																		
S	87	1	-	-	-	-	-	-	-	-	1	-	-	-	33			1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
Y	87	2	-	-	-	-	-	1	-	-	3	-	-	-	100			3
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	4	-	-	-	-	-	-	-	-	4	-	-	-	80			4
M	87	1	-	-	-	-	-	-	-	-	1	-	-	-	33	35	24	1
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	99	1	-	-	-	-	-	-	-	-	-	-	-	-	20	-	-	1
X	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	94	-	-	-	-	-	-	-	-	-	-	-	-	-	0			0
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	20			1

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'87	00%	00%	00%
'94	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
'87	133	Dec:		-
'94	0			-
'99	100			-

Symphoricarpos oreophilus																		
M	87	-	-	-	-	-	-	-	-	-	-	-	-	-	0	-	-	0
	94	1	-	-	-	-	-	-	-	-	1	-	-	-	20	30	55	1
	99	-	-	-	-	-	-	-	-	-	-	-	-	-	0	26	52	0

% Plants Showing	Moderate Use	Heavy Use	Poor Vigor
'87	00%	00%	00%
'94	00%	00%	00%
'99	00%	00%	00%

%Change

Total Plants/Acre (excluding Dead & Seedlings)				
'87	0	Dec:		-
'94	20			-
'99	0			-